

REMARKS

Claims 1-14, 16-21, 23-25 and 27-56 are now pending in the application. Claims 55 and 56 are new. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER DOUBLE PATENTING

Claim 43 stands rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 12 and 13 of U.S. Patent No. 7,010,926. This rejection is respectfully traversed. To expedite prosecution, however, upon notice of allowable subject matter that is properly subject to a double patenting rejection, Applicants agree to timely submit a terminal disclaimer.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 2, 3, 5, 6, 11, 12 and 13 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al. (U.S. Pat. No. 6,701,725) and Renders (U.S. Pat. No. 6,629,420). This rejection is respectfully traversed.

Claim 1 recites a method that includes inputting condenser parameters, evaporator parameters and compressor parameters for a cooling system, processing the condenser parameters, the evaporator parameters and the compressor parameters through a model of the cooling system, and selecting a flow control device based on an output of the model. Rossi et al. and Renders fail to disclose the method recited by Claim 1.

The Examiner agrees that "*Rossi* does not expressly disclose, *selecting a flow control device based on an output of said model*" and points to *Renders* for these limitations of Claim 1. See Office Action, 07/18/2007, p. 6. *Renders*, however, likewise fails to disclose selecting a flow control device based on an output of the model.

Renders describes a device for testing and diagnosing air-conditioning apparatuses of a car. *Renders*, Abstract. The *Renders* device may be used on cars with three different types of conditioning circuits, including an expansion valve system, an orifice tube system with clutch cycling switch, and an orifice tube system without clutch cycling switch. *Renders*, Col. 3, Lines 26-31. The device samples temperature and pressure values and compares the sampled values with reference parameters. *Renders*, Col. 4, Lines 25-30 and Col. 5, Lines 8-12.

Renders is silent as to selecting a flow control device based on an output of a model. *Renders* explicitly states that the type of conditioning system of the car is inputted by a user through a keyboard prior to execution of the sampling. *Renders*, Col. 4, Lines 16-20 and Figure 10. The type of conditioning system is input by the user to correspond with the type of conditioning system of the car for which the tool is going to be applied. *Renders*, Col. 3, Lines 26-31 and Col. 4, Lines 16-20. Thus, neither *Renders* nor *Rossi et al.* disclose selecting a flow control device based on an output of a model, as recited by Claim 1.

For at least these reasons, the prior art fails to disclose the method recited by Claim 1. Claims 2, 3, 5, 6, 11, 12 and 13 each depend either directly or indirectly from Claim 1, which defines over the prior art as discussed in detail above. For at least these

reasons, Claims 2, 3, 5, 6, 11, 12 and 13 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 43, 16, 17, 18, 19, 20, 24, 25 and 44-48 stand rejected under 35 U.S.C. § 103(a) based on Sachiko Kumada (Japanese Laid Open Application No. H 9-257319) and Scherer et al. (U.S. Pat. No. 3,708,998). This rejection is respectfully traversed.

Claim 43 recites a method that includes inputting condensing unit parameters and evaporator parameters for a cooling system, with at least one of the condensing unit parameters and the evaporator parameters including configuration information for a heat exchanger of the cooling system. The method also includes inputting compressor parameters for the cooling system and inputting refrigerant properties for a refrigerant flowing through the cooling system. The method also includes processing the condensing unit parameters, the evaporator parameters, the compressor parameters and the refrigerant properties through a model of the cooling system and generating system outputs based on the processing. Kumada and Scherer et al. fail to disclose the method recited by Claim 43.

The Examiner agrees that Kumada does not expressly disclose inputting refrigerant properties for a refrigerant flowing through the cooling system and points to Scherer et al. for these limitations. See Office Action, 07/18/2007, p. 8. Scherer et al., however, likewise fails to disclose inputting refrigerant properties for a refrigerant flowing through a cooling system.

Scherer et al., describes an in line, non-piloted, automatic expansion valve. Scherer et al., Title. Scherer et al. describes that the expansion valve is pressure responsive and floods the evaporator with refrigerant anytime the compressor's capacity

tends to exceed the heat load on the evaporator. Scherer et al., Col. 1, Lines 53-57. Scherer et al. describes a definition for superheat temperature of refrigerant vapor. Scherer et al., Col. 1, Lines 57-60. However, Scherer et al. is silent as to inputting refrigerant properties for a refrigerant flowing through a cooling system. Neither Kumada nor Scherer et al. disclose these limitations.

Further, both Kumada and Scherer et al. are silent as to processing the condensing unit parameters, the evaporator parameters, the compressor parameters and the refrigerant properties through a model of a cooling system and generating system outputs based on the processing. As discussed above, neither Kumada nor Scherer et al. disclose inputting refrigerant properties. Consequently, neither Kumada nor Scherer et al. disclose processing refrigerant properties through a model of a cooling system.

For at least these reasons, the prior art fails to disclose the method recited by Claim 43. Claims 16, 17, 18, 19, 20, 24, 25, 44-48, and new Claim 55 each depend either directly or indirectly from Claim 43, which defines over the prior art as discussed in detail above. For at least these reasons, Claims 16, 17, 18, 19, 20, 24, 25, 44-48, and 55 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 8, 9 and 10 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al., (U.S. Pat. No. 6,701,725), Renders (U.S. Pat. No. 6,629,420), and Kagawa (U.S. Pat. No. 5,687,094). This rejection is respectfully traversed.

Claims 8, 9, and 10 each depend either directly or indirectly from Claim 1, which defines over the prior art as discussed in detail above. For at least these reasons,

Claims 8, 9, and 10 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 49, 27-31, 33, 34, 37-39, 41 and 52 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al. (U.S. Pat. No. 6,701,725) and Singh et al. (U.S. Pat. No. 6,990,821). This rejection is respectfully traversed.

Claim 49 recites a method that includes inputting condenser parameters and evaporator parameters for a cooling system, with at least one of the condenser parameters and the evaporator parameters including configuration information for a heat exchanger of the cooling system. The method also includes inputting compressor parameters for the cooling system and calculating air properties based on a dry bulb temperature. The method also includes automatically inputting the air properties into a model of the cooling system and processing the condenser parameters, the evaporator parameters and the compressor parameters through said model. The method also includes generating an output based on the processing. Rossi et al., and Singh et al. do not disclose the method recited by Claim 49.

With respect to Rossi et al., efficiency estimations are made based on compressor information and based on system measurements, such as liquid line pressure, suction line pressure, suction line temperature, and liquid line temperature. Rossi et al., Col. 2, Lines 41-43. Rossi et al. is silent, however, as to inputting condenser parameters and evaporator parameters for a cooling system, at least one of the condenser parameters and the evaporator parameters including configuration information for a heat exchanger of the cooling system. Because Rossi et al. is directed to simply establishing a set standard for performance of a known system (Col. 10, Lines

4-5), and then evaluating subsequent performance as compared with the standard, the Rossi et al. estimations are based on system temperatures and pressures – configuration information for a heat exchanger is not inputted and not part of the Rossi et al. estimation.

Further, the Examiner agrees that Rossi et al. does not expressly disclose calculating air properties based on a dry bulb temperature and points to Singh et al. for these limitations. See Office Action, 07/18/2007, p. 13. The cited portion of Singh et al., describes functionally relating “compressor energy consumption and condenser energy consumption for an air-cooled condenser with outdoor dry bulb temperature.” Singh et al., Col. 7, Lines 59 - 61. Singh et al., also describes functionally relating “compressor kilowatt hours and condenser power for a water-cooled condenser with outdoor wet bulb temperature.” Singh et al., Col. 7, Lines 61-63. Singh et al., however, does not describe calculating air properties based on a dry bulb temperature.

Thus, neither Rossi et al. nor Singh et al. disclose calculating air properties based on a dry bulb temperature, automatically inputting the air properties into a model of a cooling system, processing condenser parameters, evaporator parameters, and compressor parameters through the model, and generating an output based on the processing, as recited by Claim 49.

For at least these reasons, the prior art fails to disclose the method recited by Claim 49. Claims 27-31, 33, 34, 37-39, 41, 52, and new Claim 56 each depend either directly or indirectly from Claim 49, which defines over the prior art as discussed in detail above. For at least these reasons, Claims 27-31, 33, 34, 37-39, 41, 52, and 56

likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claim 36 stands rejected under 35 U.S.C. § 103(a) based on Rossi et al., (U.S. Pat. No. 6,701,725), Singh et al. (U.S. Pat. No. 6,990,821), and Kagawa (U.S. Pat. No. 5,687,094). This rejection is respectfully traversed.

Claim 36 depends from Claim 49, which defines over the prior art as discussed in detail above. For at least these reasons, Claim 36 likewise defines over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 4, 7, 14 and 21 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al., (U.S. Pat. No. 6,701,725), Renders (U.S. Pat. No. 6,629,420), and Pray (U.S. Pat. 4,885,694). This rejection is respectfully traversed.

Claims 4, 7, 14, and 21 depend either directly or indirectly from Claims 1 or 43, which define over the prior art as discussed in detail above. For at least these reasons, Claims 4, 7, 14, and 21 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 32, 35, and 42 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al., (U.S. Pat. No. 6,701,725), Singh et al. (U.S. Pat. No. 6,990,821) and Pray (U.S. Pat. No. 4,885,694). This rejection is respectfully traversed.

Claims 32, 35, and 42 depend either directly or indirectly from Claim 49, which defines over the prior art as discussed in detail above. For at least these reasons, Claims 32, 35, and 42 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claim 40 stands rejected under 35 U.S.C. § 103(a) based on Rossi et al. (U.S. Pat. No. 6,701,725) and Singh et al. (U.S. Pat. No. 6,990,821). This rejection is respectfully traversed.

Claim 40 depends from Claim 49, which defines over the prior art as discussed in detail above. For at least these reasons, Claim 40 likewise defines over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 50, 51, 53 and 54 stand rejected under 35 U.S.C. § 103(a) based on Rossi et al. (U.S. Pat. No. 6,701,725), Singh et al. (U.S. Pat. No. 6,990,821), and Kumada (Japanese Laid Open Application Number H 9-257319). This rejection is respectfully traversed.

Claims 50, 51, 53, and 54 depend either directly or indirectly from Claim 49, which defines over the prior art as discussed in detail above. For at least these reasons, Claims 50, 51, 53, and 54 likewise define over the prior art. Reconsideration and withdrawal of the rejections are respectfully requested.

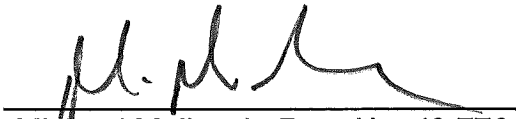
CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner

believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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